

U.S. Patent Application Serial No. 10/528,137
Response to OA dated December 14, 2007

REMARKS

Claims 1 and 18 have been amended in order to more particularly point out, and distinctly claim the subject matter which the Applicants regard as their invention. Support for the amendments is found on page 11, lines 3-11. The Applicants respectfully submit that no new matter has been added. Claims 19 and 20 are cancelled without prejudice or disclaimer. It is believed that this Amendment is fully responsive to the Office Action dated December 14, 2007.

CLAIM REJECTIONS UNDER 35 U.S.C. § 102:

Claims 1-8, 18 and 19 are rejected under 35 U.S.C. § 102(b) as being anticipated by Sato et al. (EP 1152461). Reconsideration and removal of this rejection are respectfully requested in view of the present claim amendments and the following remarks.

The Office Action alleges that Sato et al. discloses a seal cap (18), a cover (12), a first gas (28) feed opening and a second gas (30) feed opening, as shown in FIG. 1. The Office Action mentions that the cover could be (18) and the seal cap could be (12), because the specific location of each is not claimed.

It is respectfully submitted that (18) could not correspond to the claimed seal cap, as it does not seal the reaction furnace hermetically, as claimed. Therefore, Applicants consider that the Office Action is alleging that (18) corresponds to the claimed cover and (12) corresponds to the claimed seal cap.

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Regarding Claim 2, it is respectfully submitted that Sato et al. clearly does not show or suggest a flow outlet of the first gas flow into a clearance between the cover (18)) and the inner wall surface of the reaction furnace.

The present invention includes the following features: A cover installed separately from the seal cap so as to cover approximately the entire surface of the seal cap facing the inner side of the reaction furnace, a small chamber formed at least by the seal cap and the cover, a feed opening for supplying a first gas to the small chamber, a flow outlet provided in the small chamber for making the first gas flow into the reaction furnace, and a feed opening provided further downstream than the flow outlet, for supplying a second gas into the reaction furnace.

The features described above show the following functions and effects: When a substrate is processed within a reaction furnace using the first gas and second gas, it is possible to prevent the second gas from being contacted with the seal cap and to prevent the seal cap from being chemically influenced by the second gas (see the paragraph on page 17, line 24 to page 18, line 6 of the present specification).

Sato et al. discloses a rotary table (18) (corresponding to the "cover" of the present invention) so as to cover a magnetic fluid seal (14) arranged at the central part of a cap (12) (corresponding to the "seal cap" of the present invention). In Sato et al., the portion other than the central part of the cap (12) is not covered with the rotary table (18). That is, Sato et al. does not cover approximately the entire surface of the cap (12) with the rotary table (18).

The structure of Sato et al. is constructed in such a way that the portion other than the central

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part of the cap (12) is exposed and further both O₂ gas and H₂ gas can enter into the space between the rotary table (18) and the cap (12) so that both O₂ gas and H₂ gas contact the cap (12).

In other words, in the case of the structure of Sato et al., it is not possible that any of the O₂ gas and H₂ gas does not contact the cap (12). It is respectfully submitted that, Sato et al., does not provide any of the functions and effects of the present claimed invention.

In view of the amendments to Claims 1 and 18, and the above remarks, removal of this rejection is respectfully requested.

Claims 1-8, 18 and 19 are rejected under 35 U.S.C. § 102(e) as being anticipated by Kogano et al. (U.S. Patent Publication No. 2002/0094502). Reconsideration and removal of this rejection are respectfully requested in view of the present claim amendments and the following remarks.

The Office Action alleges that Kogano et al. discloses a seal cap (17), a cover (19), a feed opening for the first gas (4A) and a feed opening for the second gas (10). The Office Action mentions that the cover could be (17) and the seal cap could be (19), because the specific location of each is not claimed.

It is respectfully submitted that (19) could not correspond to the claimed seal cap, as it does not seal the reaction furnace hermetically, as claimed. Therefore, Applicants consider that the Office Action is alleging that (19) corresponds to the claimed cover and (17) corresponds to the claimed seal cap.

It is respectfully submitted that in Kogano et al. the alleged feed openings do not both supply

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gases to the reaction chamber. In Kogano et al., referring to FIG. 1, there is reaction chamber "processing space" (20) and "furnace opening portion space" (21) which are isolated from each other, as disclosed at [0038], lines 1-2. Kogano et al. discloses a structure wherein a boat susceptor (19) (corresponding to "cover" of the present invention) is installed to cover a seal cap (17) (corresponding to "seal cap" of the present invention), and a structure wherein a furnace opening portion space (21) (corresponding to "small chamber" of the present invention) is provided with a purge gas supplying tube (10) (corresponding to "feed opening for supplying the first gas" of the present invention) for supplying a purge gas (corresponding to "first gas" of the present invention).

However, Kogano et al. discloses that purge gas supplied from the purge gas supplying tube (10) to the furnace opening portion space (21) is discharged through the furnace opening exhausting tube (15) and the purge gas is not flowed out to the substrate processing space (20). That is, Kogano et al. has no element corresponding to "a flow outlet provided in the small chamber for making the first gas flow into the reaction furnace" of the present invention.

Further, it appears that a clearance between the boat susceptor (19) and the reverse-diffusion preventing body (8) corresponds to "flow outlet" of the present invention. However, as described at paragraph [0038] of Kogano et al., the reverse-diffusion preventing body (8) prevents the reverse-diffusion of a contaminant from the furnace opening portion space (21) toward the substrate processing space (20) and has no role to act as "a flow outlet for making the first gas flow into the reaction furnace" as described in the present invention.

In turn, if it is assumed that the purge gas in Kogano et al. is discharged out of the furnace

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opening portion space (21) to the substrate processing space (20), the reverse-diffusion of a contaminant from the furnace opening portion space (21) toward the substrate processing space (20) is generated and the problem in Kogano et al. cannot be resolved. That is, Kogano et al., does not assume "making the first gas flow into the reaction furnace" of the present invention.

Accordingly, it is respectfully submitted that the present invention is substantially different from Kogano et al. in view of its constitution.

In view of the amendments to Claims 1 and 18, and the above remarks, removal of this rejection is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103:

Claim 20 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Sato et al. or Kogano et al. in view of Ide Shigeaki (JP 11-121389).

Claim 20 has been cancelled.

In view of the aforementioned amendments and accompanying remarks, Claims 1-8 and 18, as amended, are believed to be patentable and in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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